

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 through 55 (Cancelled).

56. (Currently Amended) A method as in claim ~~55~~ 57 wherein the ultrafiltrate is removed at a rate determined by a mechanical filtrate pump and said method further comprising concentrating the blood by removal of the ultrafiltrate.

57. (Currently Amended) A method ~~as in claim 55 further comprising for filtering~~ blood comprising:

withdrawing blood from an adult patient;

performing ultrafiltration by filtering the withdrawn blood in a filter having an active filter membrane surface of no greater than 0.2 meters squared (m^2) to remove ultrafiltrate from the blood, wherein the filter membrane blocks the passage of blood molecules having a molecular weight cut of at least 50,000 Daltons, wherein an amount of the removed ultrafiltrate is an effective therapeutic amount for treating a fluid overload condition of the patient;

infusing the ultrafiltrated blood into the adult patient, and

removing the ultrafiltrate with the filtrate pump at a rate no greater than one liter per hour.

58. (Currently Amended) A method ~~as in claim 55 further comprising for filtering~~ blood comprising:

withdrawing blood from an adult patient;

performing ultrafiltration by filtering the withdrawn blood in a filter having an active filter membrane surface of no greater than 0.2 meters squared (m^2) to remove ultrafiltrate from

the blood, wherein the filter membrane blocks passage of blood molecules having a molecular weight cut of at least 50,000 Daltons, wherein an amount of the removed ultrafiltrate is an effective therapeutic amount for treating a fluid overload condition of the patient;

infusing the ultrafiltrated blood into the adult patient, and

withdrawing the blood in a range of 10 to 60 milliliters per minute.

59. (Currently Amended) A method ~~as in claim 55~~ further comprising for filtering blood comprising:

withdrawing blood from an adult patient;

performing ultrafiltration by filtering the withdrawn blood in a filter having an active filter membrane surface of no greater than 0.2 meters squared (m²) to remove ultrafiltrate from the blood, wherein the filter membrane blocks passage of blood molecules having a molecular weight cut of at least 50,000 Daltons, wherein an amount of the removed ultrafiltrate is an effective therapeutic amount for treating a fluid overload condition of the patient;

infusing the ultrafiltrated blood into the adult patient, and

passing the blood through a blood circuit comprising the filter during a residence time period of no greater than 120 seconds.

60. (Currently Amended) A method as in claim ~~55~~ 59 further comprising passing the blood through filter fibers having a length of at least 20 centimeters and wherein said filter fibers are housed in a substantially straight filter housing.

61. (Currently Amended) A method as in claim ~~55~~ 59 further comprising passing the blood through a straight bundle of filter fibers having at least 620 fibers.

62. (Currently Amended) A method as in claim 55, wherein said filter further comprises a substantially straight housing having a length of at least 20 cm and an internal diameter of no greater than 1.5 cm.

63. (Currently Amended) A method as in claim 55 further comprising for filtering blood comprising:
withdrawing blood from an adult patient;
performing ultrafiltration by filtering the withdrawn blood in a filter having an active filter membrane surface of no greater than 0.2 meters squared (m^2) to remove ultrafiltrate from the blood, wherein the filter membrane blocks passage of blood molecules having a molecular weight cut of at least 50,000 Daltons, wherein an amount of the removed ultrafiltrate is an effective therapeutic amount for treating a fluid overload condition of the patient;
infusing the ultrafiltrated blood into the adult patient, and
a shear rate of blood flowing through the filter of at least 1000 per second at a flow rate of no greater than 40 ml/sec.

64. (Currently Amended) An ultrafiltration filter for an extracorporeal blood circuit having an input for blood withdrawn from a human patient and a blood output for filtered blood to be infused into the patient, said ultrafiltration filter comprising:

a filter body having a length of at least 20 centimeters (cm) and an interior diameter of no greater than 1.5 cm;

an input at a first end of the body to receive the withdrawn blood;

an output at a second end of the body to discharge the filtered blood;

a filter membrane in the body defining a blood passage through the body, wherein the membrane has an active filter membrane surface area of no greater than 0.2 meters squared (m^2)

and the filter membrane blocks passage of blood molecules having a molecular weight cut of greater than 50,000 Daltons and a volume of the blood passage in the filter being less than two percent of a cardiac output of the patient, and

an ultrafiltrate output to the body and open to a side of the filter surface area opposite to the blood passage.

65. (Currently Amended) A filter as in claim 64 wherein the active filter membrane surface area is no greater than 0.1 m^2 .

66. (Cancelled)

67. (Previously Presented) A filter as in claim 64 wherein the filter membrane surface is an interior surface of a bundle of filter fibers.

68. (Previously Presented) A filter as in claim 67 wherein the filter fibers have a length of at least 20 centimeters.

69. (Previously Presented) A filter as in claim 67 wherein the bundle of filter fibers has at least 620 fibers.

70. (Previously Presented) A filter as in claim 64 wherein the filter body is substantially straight.

71. (Previously Presented) A filter as in claim 64 wherein the filter membrane comprise:

hollow fibers and said fibers are arranged in a substantially straight bundle no greater than 1.5 centimeters in diameter.